

# Advanced Beekeeping Techniques

by Buddy Marterre

The reasons for making splits are: 1) brood cycle interruption as a cultural Varroa control, 2) swarm prevention technique, 3) improvement of Varroa tolerance by selecting from your own survivor queen mothers, 4) brood comb removal and replacement tool, and 5) to expand your operation or sell nucs.

## **Make a Split and Raise Your Own Queen:**

Perform all manipulations from Noon to 3 PM, on a sunny day with little wind. Use one or two strong hives as donors. Temporarily isolate the frame w/ the queen in an empty deep during all hive manipulations. Leave at least 3 (of the > 5) frames of brood and the queen in each donor hive and transfer a total of 2 - 4 frames of brood and their nurse bees to the new (split) hive from the donors. More brood frames are needed in mid-March, fewer by late April. Add empty drawn comb or preferably no-foundation frames to the donor hives on each side of the remaining brood and replace the frame with the existing queen into the middle of the brood nest of each of the donor hives.

Arrange the new 5 frame split as follows: Place brood frames in the center, then empty drawn comb outside that, then at least one frame that is heavily pollen or bee bread-laden on one end and a nectar frame on the other end. Reduce the entrance, move the split to a new location, and feed some 1:1 sugar syrup, unless there is incoming nectar. I typically transfer only one frame containing eggs into the split (from the queen mother I prefer), and place that frame in the dead center of a 5 frame nuc box. I typically do not transfer queen cells to the split.

Check all frames that originally contained eggs for queen cell development at exactly 5 days. Exactly 5 days after the original split, cut all *capped* queen cells (they started with too old a larva which will develop into an inferior queen) out of the split. Make sure to leave exactly two queen cells that are uncapped and contain developing queen larvae that are each sitting on a heap of royal jelly. Check the split again after 21 – 24 more days (total of 25 – 28 days) for an egg-laying, mated queen. Recheck again about 2 weeks after eggs were initially laid for capped brood to ensure that the queen is well mated and not just laying drones. Continue feeding as necessary until the main nectar flow starts.

## **Make a Split with a Purchased Queen:**

Perform all manipulations from Noon to 3 PM, on a sunny day with little wind. Put a drop of water on your purchased queen's cage and store her in a cool dark place overnight. The day she arrives, make the split: Use one or two strong hives as donors for the split. Temporarily isolate the frame w/ the queen in an empty deep during all hive manipulations. Leave at least 3 (of the > 5) frames of brood and the queen in each donor hive and transfer a total of 3 - 4 frames of brood and their nurse bees to the new (split) hive from the donors.

Cut out any and all queen cells from frames transferred to the split. Spray the new split with dilute sugar syrup. Place brood in the center, then empty drawn comb, then pollen-laden and nectar frames on each end. Reduce the entrance, move the split to a new location, and feed 1:1 syrup. Add empty drawn comb or preferably no-foundation frames to the donor hives on each side of the remaining brood and replace the frame with the existing queen into the middle of the brood nest of each of the donor hives.

Add the new queen to the split (with a queening rim if you prefer) after 24 hours (remove the candy end cork). Recheck the split in 2 – 4 days with no smoke and ensure her release (do it if necessary). Once she's released, remove the queening rim. Briefly recheck the split with little or no smoke in 4 – 7 more days for eggs and larvae. Continue feeding 1:1 syrup and expand the brood chamber as necessary.

### **Double Queen Hives:**

This is a good technique for swarm control, particularly if you don't have an extra bottom board and top or don't wish to have another hive. It works particularly well just before or during a major nectar flow. Another advantage over making a split is that the strong lower colony keeps the initially weak upper colony warm, so this works well in the early spring. Also, double queen hives make more honey than single queen hives.

Stack double queen hives by moving 3 – 5 frames of brood and ALL the remaining queen cells (cut out all but two good ones) to the upper unit over a back-opened double-screen board, adding a super to the lower unit over a queen excluder, leaving the queen below. Recheck the lower unit and remove more brood every 7 – 9 days as necessary. After 23 days check for (and mark) the egg-laying queen in the upper unit and replace the double screen w/ a queen excluder and ensure an upper front entrance. Reverse the upper unit and add more supers / queen excluder to the top unit as necessary. Thus when complete, from the bottom to the top, the hive looks like this: bottom board, two brood chambers with 'old' queen, queen excluder, honey super, queen excluder, upper entrance, upper brood chamber(s), queen excluder, upper honey super(s), inner cover, top.

To separate (and expand your number of) hives after the honey flow, remove one queen, her brood chamber, and all capped brood from both hives, one honey super (and a few bees) to a new location and reduce the entrance. Leave all the uncapped brood, most of the bees, the other queen, and all the honey supers in the original location (Bee Culture April 2004, Beekeeper's Handbook, p91). Alternately, you can combine the hives back into a single queen unit using the newspaper method.

### **Removing Bees from Structures:**

Investigate the situation in advance so you can be prepared. There are two basic situations. In one, access to the colony is possible, and in the other it is not (usually due to brick or concrete). If accessible, take one or two empty hives, each with a brood chamber containing about four frames of assembled but empty frames (no foundation) and the remaining frames of foundation or drawn comb (I like at least one frame of drawn comb for the queen to start laying on), with moving screens and straps. Take demolition tools, a bee vacuum, wire, fine string, or 8" postal rubber bands, a full bee suit with veil and gloves, and approach the colony on a warm day. Bring (fully suited) help and be safe. In particular, do not expose yourself to heights on ladders as a defensive colony can quickly change your orientation and lead to personal injury.

Gain access to the colony by removing siding, etc. remembering that given the choice in a hollow tree, about 1/3 of the comb will have been built above the entrance (for honey storage) with the majority of the broodnest will have been built below the entrance. Remove sheets of brood comb carefully one at a time, cut them to fit the empty frames (pressing an empty frame onto the surface will give you cutting marks), and string, wire, or rubber band the brood comb into the frame and place it in the hive. Alternating brood comb frames with frames of foundation works well. Once the majority of the brood comb has been removed you may collect honey-laden comb too, but you don't need to put this into the hive. Then vacuum out the rest of the bees (and hopefully the queen), put them into the hive, and close it up. Any remaining bees can be killed with soapy water. In the cavity, ALL the comb must be removed, and it must be filled (with insulation, the lack of which is usually the reason they chose that location to begin with) or it will attract another swarm. Foragers will continue to cluster at the old entrance for a few days, but will die without their queen.

In an inaccessible situation, a trap out is necessary. Plug up all accessory entrances (there is usually at least one), affix a trap to the entrance, and place a temporary hive RIGHT NEXT TO the hole in the trap. The trap is like a reverse fish trap made of 1/8" wire mesh, shaped in a cone that is about 12" long and has an opening that will only allow one or two bees to pass through it. Seal the base of the screen trap with silicone. The temporary hive can be a 5 frame nuc or single brood chamber hive, but should contain one or two frames of brood from another hive (and either eggs, pollen and nurse bees, so that they can rear their own queen, or a queen). Over many weeks, the foragers will come out of the colony in the wall, through the one-way trap, and into the temporary hive. Many nucs can be created with queens reared as above. Their Nasanov scent will diffuse through the screen. Eventually, the colony within the structure will die from a lack of resources. Then the entrances can be left open for another week or two and robbers will clean out the rest of the honey. The owner needs to be made aware that dead bees, decaying brood, and potentially a lot of honey will be left within the wall and that it may smell or cause further cosmetic damage.

### **Comb honey production:**

The two reasons to make comb honey are cut comb squares (in a little box), and chunk honey (rectangular chunks of honeycomb covered with extracted honey in a jar). The process of producing it starts the same. Put a one inch strip of thin wax foundation (without wire reinforcement) at the top of each frame to go in your comb producing supers. Particularly if you use a queen excluder without an upper entrance, 'bait' the bees into that super with a frame of drawn comb and either nectar or capped honey on either end. Provide an upper entrance (with a shim or a hole in the super) directly into the super and put the super on the hive during a strong nectar flow. Make sure the hive is perfectly level, because the wax builders will construct the comb exactly perpendicular to the earth.

### **Dowda Method of Varroa Mite Control:**

You need 10X powdered sugar, a measuring cup, a sifter (tea strainer or flour sifter), and a bee brush. The hive must have a screened bottom board (1/8" mesh). Insert a dry bottom board or piece of poster board below the screen. Separate the brood chambers and sift 1 cup of 10X powdered sugar over the brood frames. Brush the sugar off the top bars down between the frames. Replace the upper brood chamber, sift another cup of powdered sugar and brush it down too. Wait at least 5 minutes, remove the bottom board and check for mites. Leave the bottom board out for ventilation. If you see a lot of mites, repeat this every few days.

### **Drone Brood Varroa Mite Trapping / Removal:**

Have bees draw comb on frames of drone cell foundation in the spring. If not already present, place one frame of drawn drone comb per brood chamber in positions 3 or 4 by early June. After all the drone cells have been capped, remove them, put them in the freezer and replace them with alternates within 24 hours. Removed drone frames may be placed into a drone rearing, untreated 'sacrificial colony' or put into the freezer. If placed into a queenright sacrificial colony, they may be removed and replaced into their original colony after the drones have emerged. If frozen, the frames should be kept in the freezer until they can be immediately placed back into their original colony. Warm them up just before returning them to the hive. DO NOT feed decayed brood back to your bees. It takes the bees a few days to clean out the dead cells and the queen a few more days to lay more unfertilized eggs. Rotated drone combs from the freezer or sacrificial colony to the original hive every 26-30 days in June, July, August, and perhaps September. Drones develop in 24 days. Hence the rotation period of 26 – 30 days. If the drone comb is filled with honey, do not remove it.